
The New Mexico Plan: Primary Care Curriculum

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THE UNIVERSITY OF NEW MEXICO SCHOOL OF MEDICINE has developed and instituted an alternative curriculum to educate physicians who will be competent and comfortable practicing primary care in rural areas. The new 4-year track, New Mexico Primary Care Curriculum (PCC), accepted its first class in the fall of 1979. Its central features include expanded student selection criteria, small group, problem-based learning, and early, rural primary care experience and role modeling.

The program is an outgrowth of educational innovations developed by the Department of Family, Community, and Emergency Medicine over the past 4 years. In this approach, preclinical medical students are taught clinical skills from the first day of medical school, and they participate in longitudinal, real-life clinical experiences in primary care settings throughout their preclinical years (1). This approach establishes primary care as a student's initial, intensive clinical role-modeling experience before confronting the tertiary care, speciality-oriented environment of the third-year clinical clerkships.

PCC depends on the success of this experience. It functions under the premise that if medical education

is to influence students' career choices toward primary care and location preference for a rural area, the following criteria should be met: (a) students who desire and are most likely to practice in rural areas should be selected, (b) the educational process should foster those skills in independent problem solving and self-education necessary for the rural, primary care practitioners, and (c) extensive experiences in rural primary care should be offered throughout the medical curriculum under the guidance of appropriate role models.

Admissions

Applicants must be accepted into medical school before they are considered for the PCC track. All accepted students are then asked to indicate whether they prefer the PCC or the conventional curriculum track. An admissions subcommittee reviews PCC applicants and gives preference to those students from a rural background and from medically underserved communities. The subcommittee also looks for leadership experience, flexibility when confronting new situations, demonstrated commitment to community needs, and skills in interpersonal communication. Finally, the applications are critically reviewed for evidence of a student's ability to be self-directed in work and study and to function cooperatively in a group. For the first class in 1979, 10 students were admitted; 15 will be admitted in 1980 and 20 in succeeding years.

Curriculum

PCC is a 4-year curriculum divided into three phases. The first 2 years are completely separate from the conventional track.

Phase IA: Clinical problem-based tutorial. The first part of Phase I lasts 8 months. During this time, the medical student enters a clinical, problem-based cur-

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riculum that uses small group tutorials and self-directed study. Tutorial groups meet two to three times a week, for 2 to 3 hours each session; work on each patient problem lasts approximately 1 week. The biomedical problems selected for discussion represent the most common clinical problems confronted by primary care physicians in rural New Mexico. Members of the tutorial group share their knowledge and identify gaps in their understanding of an issue. These deficiencies then become their focus of information gathering before the next tutorial.

A recent example illustrates how the group functions. The patient's problem concerned a 53-year-old woman, a heavy smoker, who appeared to have acute bronchitis. The pooled knowledge elicited by group discussion built a general understanding of how lung defense mechanisms are impaired by smoking. While the students were knowledgeable enough to order certain laboratory tests with confidence (sputum smear, chest X-ray, and spirometry), they were uncertain about ordering an antibiotic for possible secondary bacterial infection of the bronchi. This issue then became a jumping off point for further study.

A variety of written and audiovisual learning resources pertaining to issues identified by the tutorial group are made available to the students. Resource faculty in the basic and clinical sciences, who are experts in specific fields, are also available for further explanations, interpretation, and guidance. Because New Mexico is a bilingual, multicultural State, the designated resource faculty also includes anthropologists, sociologists, and economists. Issues in basic, clinical, and social sciences are continuously interwoven throughout the educational program. Because PCC provides no concurrent courses or lectures in traditional disciplines, the bulk of student time is spent in independent, self-directed study. Knowledge acquired during the study of one problem serves as groundwork for successive problems. Tutor, peer, and self-evaluation takes place at the conclusion of each problem.

Phase IB: Rural clinical clerkship. After the students have acquired a foundation of basic and clinical science knowledge during Phase IA, they enter Phase IB—a 4–6-month clinical clerkship in rural New Mexico. Rural sites selected for the students encompass a variety of patient populations, representing the cultural diversity of the State and varied patterns of medical practice. Current sites range from an Indian Health Service hospital on a reservation to a private group practice in an Anglo ranching community to a National Health Service Corps clinic in an old Spanish village.

The rural clerkship involves a working relationship with physicians who have chosen primary care as their lifework and who can serve as appropriate role models in this early phase of medical education. The experience also introduces students and their families to rural life and exposes them to the highly personal alliance between physician and community in these settings. A number of rural New Mexico communities have already planned activities to welcome “their” medical students, including appropriate lodging for the family and employment opportunities for the spouse.

In addition to serving as a critical learning experience for the student, the university's experience over the past several years has shown that the placement of medical students within the community can help focus the limited outreach capabilities of the medical school toward helping the community address unmet health needs (2). Students and rural physicians will receive educational support from PCC faculty and the School of Medicine throughout the clerkship—the kind of support will respond to the particular needs of local physicians. These requests, up to this time have been varied—an updated library of textbooks for a community hospital and organized telephone consultation service linked to university specialists, for example. One group has requested that the same students who complete rural clerkships at their sites remain the ombudsmen for those sites' patients who are subsequently referred to the University Medical Center.

Phase II: Advanced clinical problem-based tutorial. During this 10-month phase, students return to the medical center for an advanced, small-group tutorial, problem-based curriculum. Whereas Phase I focused on the most common medical problems, the problems in Phase II are chosen to illustrate important mechanisms of basic and clinical sciences. The students' approach to these problems is expected to be far more sophisticated than in Phase IA, because they will have acquired a clinical framework upon which to build and to expand their knowledge and understanding of human biology. Continuous clinical experience in an ambulatory setting of the students' choice is encouraged during this phase to permit maintenance and refinement of the clinical skills they developed during the rural clinical clerkship. At the conclusion of Phase II, students will sit for Part I of the examination of the National Board of Medical Examiners.

Phase III: Clinical clerkships. The final phase consists of inhospital clinical clerkships, electives, and a rural subinternship. PCC students have an inpatient experience identical to that offered students in the

conventional curriculum during their third year. When the inhospital portion of Phase III is completed, students return to a rural New Mexico community for a subinternship that lasts a minimum of 3 months to reinforce rural-based practice after they have acquired additional clinical skills and insight. Students also devote a minimum of 5 months to elective experiences. They will sit for Part II of the examination of the National Board of Medical Examiners during this final phase.

Program Evaluation

PCC is being evaluated by a team of medical sociologists who are not affiliated with PCC. A key basis for program evaluation rests in the design of the admissions process. The entering class of 73 students was divided into 4 study groups. The experimental group consisted of 10 students who preferred and were accepted to PCC; they were randomly elected into this track. Control group 1 consisted of the remaining students who preferred and were acceptable to PCC, but were randomized into the conventional track. Control group 2 consisted of students who desired but were not acceptable to PCC and thus entered the conventional track. And control group 3 consisted of those students who preferred and therefore entered the conventional track. This study design permits program evaluators to follow students prospectively and later determine which outcomes were related to the admissions process, which to self-selection, and which to the curriculum.

Students in the experimental group and the three control groups are being evaluated periodically on a variety of cognitive and noncognitive parameters. The following assessments are essential to program evaluation.

1. The efficacy of the admissions procedure in selecting students who will complete the PCC track and eventually practice primary care in rural areas.
2. The efficacy of the PCC curriculum in increasing the clinical competence of its students above that of students in the conventional track.
3. The efficacy of the PCC curriculum in increasing the percentage of graduates selecting health careers in rural, primary care settings, above that of graduates of the conventional track.
4. The impact of PCC on its students' attitudes toward their medical education, their peers, and faculty.

Evaluation of the clinical skills and problem-solving ability of students is being achieved by using instruments developed to test these clinical behaviors in the precise manner in which the student is expected to

exhibit them upon graduation. These evaluations use real-life clinical problems, simulated patients, problem-based writeups, problem formulations, and verbal presentations of basic mechanisms underlying the clinical problems that are identified. Since PCC and conventional track students will rotate on the same third-year inhospital services concurrently, comparisons can be made readily between the two groups of students, including problem-solving ability and patient management skills.

It is hypothesized that if the interim and long-range goals of PCC are achieved and the program outcomes are widely reported, the PCC model will have a substantial effect on the conventional track and on medical school curriculums outside New Mexico. It might also alter the relationship between the University of New Mexico School of Medicine and the State's legislature, rural communities, and private practice community. The role of PCC as a change agent will thus be documented.

Discussion

Medical education, so little changed since the Flexnerian reforms of the early 20th century, must assume partial culpability for the state of the present health care system. Education of students solely within the academic centers that are concentrated in urban areas and serve as focal points for the advancement and refinement of medical technology, has led to the well-recognized patterns of specialization in urban and suburban areas. Publically funded institutions will be under increasing pressure to bring about change in the practice patterns of their graduates as public demand for health care comes into conflict with current economic realities.

The University of New Mexico Primary Care Curriculum combines educational change, developed within the School of Medicine, with educational innovations from other universities. The importance of early clinical experience, and the beneficial effect (to both the community and the student) of placing students in communities away from the medical school are direct outgrowths of experiments in medical education conducted by the medical school during the past 4 years. Problem-based learning has been chosen as the educational methodology for PCC, because it fosters the development of self-directed skills so necessary for the rural primary care physician.

References

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